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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/141,287	08/27/98	WU H	30-4540-4780

MM12/1209

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EXAMINER	
WHIPPLE,M	
ART UNIT	**PAPER NUMBER**
2813	8

DATE MAILED: 12/09/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/141,287	Applicant(s) Wu et al.
	Examiner Matthew Whipple	Group Art Unit 2813

☒ Responsive to communication(s) filed on *Sep 22, 1999* .

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-31* is/are pending in the application.

Of the above, claim(s) *30 and 31* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-29* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of claims 1-29 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the restriction is not proper under CFR 1.141(b). This is not found persuasive because CFR 1.141(b) applies when all three categories of claims including product, process of making, and process of using are claimed. In the instant case, only process of making and product claims are set forth. Therefore CFR 1.141(b) does not apply.

The appropriate standard for determining distinctness of product and process claims is whether the product could be made by another process. This requirement has been met for the reasons discussed in the previous office action.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,736,425 (Smith et al.) in view of Hawleys Condensed Chemical Dictionary (Hawleys).

Smith et al. teach applicant's claimed process, including forming a substantially uniform alkoxysilane gel composition by combining TEOS, ethylene glycol, ethanol. water and ammonium hydroxide catalyst (see col. 10, lines 52-67 and Figure 8B). The gel composition is then aged in an organic atmosphere of nearly saturated ethylene glycol (col. 11, lines 20-40) which would inherently act to condense the gel composition because it is the same as applicant's disclosed heating step (see applicant's disclosure, page 8, lines 12-20). Note that when the reference speaks of preventing condensation it is talking about condensation from the vapor atmosphere, not condensation of the gel film (col. 4, lines 45-47). The film is than dried (cured). Ethylene glycol has a boiling point of 197° C (see Hawley's chemical dictionary) and ethanol is lower than 120° C. The alkoxysilane would be exposed to water vapor and base vapor because every liquid has a certain vapor pressure for any temperature and pressure and further because the water solution was refluxed above the boiling point of water (col. 10, line 54). The liquid TEOS mixture is dispensed onto the substrate and spun. Dielectric constants are taught at col. 6, lines 10-15. Metal lines and a silicon substrate are taught at col. 10, lines 37-45. HMDS as a surface treating agent and hydrophobicity is taught at col. 14, lines 35-40. Smith does teach that the low volatility solvent should have a boiling point of between 175-250° C and should be miscible with water and ethanol, but does not teach using a monomethyl ether.

However, Hawley's Condensed Chemical Dictionary teaches that diethylene glycol monomethyl ether has a boiling point of 194° C and is soluble in water. p393.

Further, this combination of references is very similar to that of Sinclair & Carroll Co v Interchemical Corp., where claims directed to a printing ink comprising a solvent having the vapor pressure of butyl carbitol were held invalid over a reference teaching a printing ink made with a different solvent, combined with an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks, and another reference teaching the boiling point of butyl carbitol. The court stated that, "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle". Sinclair & Carroll Co v Interchemical Corp. 325 U.S. 372, 335 (1945).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use dielethylene glycol monomethyl ether as a solvent in the Smith process because it has the characteristics required by Smith, including boiling point and miscibility in water. The Smith in view of Hawley combination provides a stronger suggestion to combine than in Sinclair because the Smith reference itself teaches the necessary boiling point, so that a 3rd motivational reference is not required. Further, Smith even suggests that glycols be used, which would lead the ordinary artisan to consider glycol compounds such as those of the instant claims. Therefore, a *prima facie* case of obviousness is made.

Smith et al. does not expressly mention a combined stream, as in claims 10-12.

However, the examiner gives Official Notice that dispensing to spin a liquid is known and obvious to be done by pouring the liquid in a stream onto the substrate.

Further, if HMDS and hydrophobicity are not considered anticipated, then they are obvious, in view of the disclosure of Smith et al at column 14, lines 38-42.

Double Patenting

4. Claims 1-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-53 of U.S. Patent No. 5,736,425 or claims 1-39 of U.S. Patent 5,807,607, either one in view of Hawleys, as applied in the rejections above. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims read in light of the disclosure make applicant's claimed invention obvious, similarly as discussed in the rejections above.

Response to Amendment

5. Applicant's arguments filed 9/22/99 have been fully considered but they are not persuasive. Applicant argues that the use of monomethyl ether solvents, as claimed, provides improved stability. However, no such teachings are set forth in the disclosure, so that applicant's arguments alone are not enough to overcome the *prima facie* case of obviousness.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,494,858 (Gnade et al.) teach gelation and aging in a saturated ethanol

atmosphere (col. 5, lines 1-5). Also, EP 0775669 teaches a similar process to that of the claimed invention, including using both low and high volatility solvents (see Table 3, p14.).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Whipple whose telephone number is (703) 308-2521.

MLW

November 24, 1999

CC

Chandra Chaudhari
Primary Examiner